

WQBEL-TOXICS RECOMMENDATIONS
FACT/DECISION SHEET
DECO Monroe - (MI0001848- Reissuance)
PREPARED BY: Amanda Bosak
Today's Date: 3/10/2015

Background

DECO Monroe Power Plant submitted a permit reissuance application on April 9, 2014. The facility is located in Monroe County, Michigan. The current NPDES permit was issued on January 22, 2010, effective March 1, 2010, and expired on October 1, 2014. The current NPDES permit authorizes to continuously discharge a maximum of 1,978 million gallons per day (MGD) of noncontact cooling water, fly ash transport water, bottom ash transport water, coal pile runoff, chemical metal cleaning wastes, nonchemical metal cleaning wastes, boiler water drained from boilers during outages, treated flue gas desulfurization wastewater, flue gas desulfurization pre-treatment system backwash, demineralizer regeneration wastes, miscellaneous low volume wastes, and storm water runoff of from outfall 001A to Lake Erie. Outfalls 001B, 001D, and 001F are internal outfalls. Outfall 003 discharges storm water to the River Raisin.

Lake Erie has a 10:1 dilution of lake to effluent. Lake Erie is protected as a drinking water source.

The 2014 Water Quality and Pollution Control in Michigan Sections 303(d), 305(b), and 314 Draft Integrated Report indicates Lake Erie (AUID 041202000001-01) to be Not Supporting the following designated uses:

Designated Use	Cause and Total Maximum Daily Load Schedule (year developed or to be developed)
Fish Consumption	Dioxin (2015), PCB in Fish Tissue (2015)

Sources

Sources of information used for this review to develop the water quality-based effluent limits (WQBELs) include the facility's permit reissuance application, the Permits Section Toxics facility file, the current NPDES permit, discharge monitoring data, and United States Geological Survey topographical maps. Based upon our review of this information, we have the following recommendations:

Recommendations

Outfall 001A

- 1) From January 2010 to January 2015 daily flow ranged from 0 to 1,972 MGD with an average of 1,541 MGD compared to 1,978 MGD as requested from the facility.
- 2) The current permit includes daily minimum and maximum pH limits of 6.5 and 9.0 Standard Units (S.U.), respectively with weekly grab samples. Levels of pH in the final effluent since January 2010 ranged from 6.7 to 8.9 S.U, averaging 7.8 S.U. There were no exceedances of the daily minimum or maximum pH final effluent limitation. We recommend the draft permit retain the current permit limits and monitoring requirements for pH.
 - a. These limits will allow the receiving water body to maintain the hydrogen ion concentration according to Rule 323.1053 of the Part 4 Michigan Water Quality Standards (WQS).
- 3) The current permit includes daily monitoring of temperature. Temperature from January 2010 to January 2015 ranged from 34 to 103°F with an average of 75°F. In addition to effluent temperatures reporting, the facility is required to collect temperature readings (Monday – Friday only) at the outlet to Lake Erie when the effluent is ≥100 °F. There were 26 readings from the outlet to Lake Erie. We recommend that the draft permit maintain the current permit monitoring requirements for temperature.
- 4) The current permit includes daily maximum heat addition of 15,500 Million British Thermal Units per hour (MBTU/Hr). Heat addition from January 2010 to January 2015 ranged from 1,280 MBTU/Hr to

13,600 MBTU/Hr. There were no exceedances of the maximum heat addition limit. Comparisons to the calculated screening level show that the facility has the potential to exceed WQS 11% of the time(Appendix 1). The original thermal plume study was completed in 1976. The facility completed a thermal plume verification study in 2007 indicating a much larger area of impact as previously described in the initial 1977 study. The permit that took effect in 2006 required a full thermal plume study that would include biological monitoring. This requirement was put on hold until issues with 316(b) were resolved. We recommend that the full thermal plume study be included in the draft permit. The following language should be included in the current permit:

316(a) Thermal Demonstration Update

The permittee shall conduct an update of the 316(a) demonstration for this facility for the discharge from Outfall 001 to Lake Erie. The update shall include at a minimum descriptions of changes in facility operations, temperature increase in the receiving water, an assessment of the receiving water's balanced, indigenous population of shellfish, fish, and wildlife and how it is protected and propagated within the area of influence of the thermal discharge.

On or before insert date, a plan for conducting the study update in accordance with the above requirements shall be submitted to the Department for approval. The plan should specify at minimum the species that will be evaluated and the techniques and methods that will be used for collection. The plan should also provide an explanation for why species that are present, but not evaluated are represented by the identified species.

On or before insert date, the permittee shall implement the approved plan and submit the final report.

Upon request by the permittee, the Department may approve modifications to the study requirements and schedule if conditions present a safety concern.

- 5) The current NPDES permit includes daily maximum total residual chlorine (TRC) limit of 38 micrograms per liter ($\mu\text{g/L}$) for continuous discharges and 200 $\mu\text{g/L}$ for intermittent discharges. The facility had only one intermittent chlorine use reported this permit cycle on June 6, 2013. The discharge concentration was reported as non-detect. There were no exceedances of the maximum TRC limits. We recommend the draft permit retain the current permit limits and monitoring requirements for TRC including the requirement to report the TRC Discharge Time.
- 6) The current permit includes a calculation and reporting of de-chlorination reagent used. The facility did not report using a de-chlorination reagent this permit cycle. We recommend the draft permit retain current reporting requirements for de-chlorination reagent.
- 7) The current permit includes a mercury level currently achievable limit of 10 nanograms per liter (ng/L) [0.16 lbs/day] and compliance determine with monthly grab samples. Data submitted with the application ranged from 0.8 ng/L to 13 ng/L and 0.010 lbs/day to 0.17 lbs/day. These data indicate there is a reasonable potential for total mercury to be discharged at concentrations exceeding Michigan Water Quality Standards (WQS). We recommend the draft permit include a level currently achievable total mercury limit of 6.0 ng/L [0.099 lbs/day]. Compliance with this limit shall be quarterly with samples collected as grab samples. A Pollutant Minimization Program (PMP) for total mercury should be retained in the draft permit consistent with R323.1103, Variances.
 - a. Review of total mercury final effluent data and reasonable potential analysis was consistent with Water Resources Division, Policy and Procedure, WRD-004, Calculation of LCA for Mercury in Proposed National Pollutant Discharge Elimination System (NPDES) Permits.
- 8) The current permit does not include a limit or monitoring requirement for total copper. Data indicated that the potential effluent quality approaches the daily maximum limit of 40 $\mu\text{g/L}$. We recommend the draft permit include quarterly monitoring. Additional data points will be helpful for future review. We recommend analysis be completed using an EPA approved method at a quantification level not to exceed 1 $\mu\text{g/L}$.

- a. Two data points were available from the last permit cycle for January and February 2010 and from the scan required with the application.
- 9) In addition, data submitted with the application for barium, boron, lead, manganese, nickel, and zinc were provided from a sampling event on 11/4/13. These data do not indicate a reasonable potential to exceed Michigan WQS. Data should be collected for these parameters and others during required scans for the steam electric primary industry.
- 10) Scans completed for the application did not use sufficiently sensitive quantification levels for the following parameters: 3,3-Dichlorobenzidine, Benzidine, Hexachlorobenzene, and Hexachlorobutadiene (Appendix II). Based on the Environmental Protection Agency's (EPA) Use of Sufficiently Sensitive Methods for Permit Applications and Reporting the quantification level should be the lowest available. We recommend that a quarterly monitoring requirement be included in the draft permit for the following parameters using an EPA approved method at the quantification levels listed in the table below. Appropriate language should also be included in the draft permit to allow the permittee to request a monitoring frequency reduction to no less than annually after one year of monitoring.

Parameter	EPA Approved Method	Quantification Level ($\mu\text{g}/\text{L}$)	Quantification Level ($\mu\text{g}/\text{L}$) from the facility
3,3-Dichlorobenzidine	EPA Method 605	1.0	10.0
Benzidine	EPA Method 605	0.1	10.0
Hexachlorobenzene	EPA Method 612	0.01	10.0
Hexachlorobutadiene	EPA Method 612	0.01	10.0

Outfall 001B

This is an internal outfall.

- 1) The current permit includes a daily maximum load limit for Total Copper of 1.0 mg/L with compliance determined with a grab sample collected daily with discharge. No data was reported.
- 2) The current permit includes a daily maximum load limit for Total Iron of 1.0 mg/L with compliance determined with a grab sample collected daily with discharge. No data was reported.
- 3) The current permit has a monthly monitoring requirement for total mercury. Data ranged from 2.4 ng/L to 457 ng/L with an average of 49 ng/L. Monthly monitoring is included in the Pollutant Minimization Program for this facility. We recommend the requirement for total mercury be retained in the draft permit.

Outfall 001D

This is an internal outfall without toxic parameters.

Outfall 001F

This is an internal outfall without toxic parameters.

Outfall 003

This outfall discharges storm water to the River Raisin.

Appendix I: thermal discharge comparison to WQS

	Intake °F	WQS °F	effluent °F	Eff °F>WQS °F	ΔT°F (WQS-Tb)	Design flow MGD	Screening Level mBTU/hr	Theoretical mBTU/hr	Need Further Review (>H)	Actual Flow	Actual mBTU/hr	Calc WQS mBTU	Potential to Exceed WQS
1/31/2010	39	45	64 yes	3.0	1978 22683		17228 no	1283		11173	22683 no		
2/28/2010	38	45	66 yes	3.0	1978 22683		18804 no	1288		12245	22683 no		
3/31/2010	45	45	70 yes	0.4	1978 2867	17450 yes		1134	10002	2683 yes			
4/30/2010	57	60	75 yes	3.0	1978 22683		12647 no	1385		8853	22683 no		
5/31/2010	64	70	81 yes	3.0	1978 22683		12284 no	1428		8870	22683 no		
6/30/2010	75	75	90 yes	0.0	1978 2867	10104 yes		1819	9293	0 yes			
7/31/2010	81	80	96 yes	0.0	1978 2867	10554 yes		1932	10309	0 yes			
8/31/2010	80	85	98 yes	3.0	1978 22683		12528 no	1932		12236	22683 no		
9/30/2010	66	80	89 yes	3.0	1978 22683		15465 no	1921		15022	22683 no		
2/28/2011	37	45	60 yes	3.0	1978 22683		15834 no	1035		8285	22683 no		
3/31/2011	40	45	62 yes	3.0	1978 22683		15122 no	966		7385	22683 no		
4/30/2011	49	60	68 yes	3.0	1978 22683		13862 no	1406		8007	22683 no		
5/31/2011	60	70	59 yes	3.0	1978 22683		14324 no	1169		8462	22683 no		
6/30/2011	72	75	59 yes	3.0	1978 22683		14922 no	1397		10540	22683 no		
7/31/2011	79	80	97 yes	1.3	1978 5734	12262 yes		1901	11783	9512 yes			
8/31/2011	77	85	95 yes	3.0	1978 22683		12372 no	1901		11890	22683 no		
9/30/2011	68	80	87 yes	3.0	1978 22683		13174 no	1202		807	22683 no		
10/31/2011	58	70	77 yes	3.0	1978 22683		11729 no	1470		8716	22683 no		
11/30/2011	48	60	67 yes	3.0	1978 22683		11823 no	1846		11034	22683 no		
12/31/2011	41	50	63 yes	3.0	1978 22683		15077 no	1439		10966	22683 no		
1/31/2012	39	45	63 yes	3.0	1978 22683		16208 no	1226		10044	22683 no		
2/29/2012	41	45	65 yes	3.0	1978 22683		16029 no	966		7825	22683 no		
3/31/2012	51	45	72 yes	0.0	1978 2867	14412 yes		1177	8212	0 yes			
4/30/2012	54	60	71 yes	3.0	1978 22683		11754 no	1809		10747	22683 no		
5/31/2012	65	70	81 yes	3.0	1978 22683		10865 no	1880		10327	22683 no		
6/30/2012	71	75	84 yes	3.0	1978 22683		9142 no	1809		8359	22683 no		
7/31/2012	79	80	94 yes	0.8	1978 2867	10241 yes	1854	9602		5854 yes	22683 no		
8/31/2012	77	85	93 yes	3.0	1978 22683		11375 no	1916		10419	22683 no		
9/30/2012	70	80	87 yes	3.0	1978 22683		11823 no	1819		11885	22683 no		
10/31/2012	57	70	74 yes	3.0	1978 22683		11685 no	1714		10125	22683 no		
11/30/2012	46	60	67 yes	3.0	1978 22683		14274 no	1336		9643	22683 no		
12/31/2012	42	50	61 yes	3.0	1978 22683		13193 no	1169		7794	22683 no		
1/31/2013	40	45	63 yes	3.0	1978 22683		15898 no	1293		10394	22683 no		
2/28/2013	39	45	63 yes	3.0	1978 22683		16030 no	1288		10438	22683 no		
3/31/2013	42	45	63 yes	3.0	1978 22683		14634 no	1143		8453	22683 no		
4/30/2013	49	60	69 yes	3.0	1978 22683		13930 no	1063		7484	22683 no		
5/31/2013	64	70	79 yes	3.0	1978 22683		10266 no	1755		9111	22683 no		
6/30/2013	71	75	87 yes	3.0	1978 22683		10654 no	1927		10377	22683 no		
7/31/2013	75	80	92 yes	3.0	1978 22683		11596 no	1927		11296	22683 no		
8/31/2013	74	85	92 yes	3.0	1978 22683		12195 no	1932		11911	22683 no		
9/30/2013	70	80	90 yes	3.0	1978 22683		13564 no	1809		12402	22683 no		
10/31/2013	60	70	78 yes	3.0	1978 22683		12616 no	1350		8613	22683 no		
11/30/2013	45	60	70 yes	3.0	1978 22683		16886 no	1170		9988	22683 no		
12/31/2013	38	50	60 yes	3.0	1978 22683		15211 no	1356		10424	22683 no		
1/31/2014	38	45	54 yes	3.0	1978 22683		11552 no	1205		7037	22683 no		
2/28/2014	39	45	60 yes	3.0	1978 22683		14189 no	1472		10559	22683 no		
3/31/2014	38	45	61 yes	3.0	1978 22683		16426 no	1283		10469	22683 no		
4/30/2014	51	60	68 yes	3.0	1978 22683		11639 no	1173		6900	22683 no		
5/31/2014	62	70	81 yes	3.0	1978 22683		12638 no	1272		8130	22683 no		
6/30/2014	75	75	89 yes	0.2	1978 2867	9738 yes		1818	8951	1512 yes			
7/31/2014	77	80	93 yes	3.0	1978 22683		11596 no	1924		11278	22683 no		
8/31/2014	75	85	94 yes	3.0	1978 22683		1642 no	1283		10469	22683 no		
9/30/2014	71	80	87 yes	3.0	1978 22683		11066 no	1813		10144	22683 no		
10/31/2014	73	70	59 no	0.0	1978 22683		-9512 no	1838		-8840	0 no		
11/30/2014	68	60	46 no	0.0	1978 22683		-1528 no	1548		-11960	0 no		
12/31/2014	41	50	61 yes	3.0	1978 22683		13525 no	1367		9345	22683 no		
1/31/2015	39	45	55 yes	3.0	1978 22683		11552 no	1377		8042	22683 no		

Appendix II: Potential effluent limits of parameters that do not have low enough quantification levels.

Parameter	Monthly Average PEL								Daily Max PEL	
	FCV	load	HNV	load	HCV	load	WV	load	conc	load
Benzidine #	29.7	489.94672	814	13428.169	0.0165	0.2721926	#VALUE!	#VALUE!	49	808.32961
Hexachlorobenzene # @	#VALUE!	#VALUE!	0.046	0.75884	0.00045	0.0074234	0.0003	0.004948957	1200	19795.827
Hexachlorobutadiene # @	1.000081648	16.49787	0.093	1.5341766	0.33	5.4438525	0.053	0.874315701	15	247.44784
3,3'-Dichlorobenzidine #	49.5	816.57787	7150	117950.14	1.54	25.404645	#VALUE!	#VALUE!	81	1336.2183

NPDES PERMIT REVIEW SUMMARY

Facility:	DECO Monroe		
Permit Number:	MI0001848		
Reviewer:	Amanda Bosak		
Date:	3/10/2015		

Outf.	Authorized Flow		Disch. Type *	Receiving Water	Lake?	FLOWS (cfs)			pH Hardness	
	mgd	cfs				95% Exc.	H. Mean	90Q10		
001	1978	3061.92		Lake Erie	<input checked="" type="checkbox"/>	122476.8	122476.8	122476.8	7	100

* P = Process; N = Noncontact Cooling; C = Contact Cooling; S = Sanitary; ST = Storm Water; GW = Groundwater Purge

SOURCES REVIEWED

Permit Application	Type of issuance:																																
Facility/VGW File																																	
NMS Documents & Files																																	
Current Permit	Parameters Limited:																																
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Parameter</th> <th>Mo Avg.</th> <th>Load</th> <th>D Max</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Parameter	Mo Avg.	Load	D Max																												
Parameter	Mo Avg.	Load	D Max																														
	Special Conditions:																																
WTA	WTA/NMS GUIDANCE																																
Biosurvey Reports	Report #:																																
WET Tests	Date:																																
MiSWIMS/STORET																																	



REASONABLE POTENTIAL: CHEMICAL SPECIFIC (p. 1 of 2)

*concentration values in ug/L except as noted

Facility:	DECO Monroe	Hardness:	100 mg/L CaCO3
Outfall:	1	pH:	7
Date:	3/10/2015	Drinking Water:	Y

Parameter	CAS #	Water Quality Values										Diss. Met. Translator	Background Conc.
		FCV	vd	HNV	vd	HCV	vd	WV	vd	FAV	vd		
Barium	7440393	437.7882696	2200905	1900	1199705	NA	0	NA	0	2498.224081	2200905	1	0
Boron	7440428	7200	1201112	4000	1201209	NA	0	NA	0	69000	1201112	1	0
Copper	7440508	8.955751301	1199707	470	1200512	NA	0	NA	0	26.87822651	1199707	1.5	4
Lead	7439921	20.81748881	2201011	14	1200709	NA	0	NA	0	399.1513317	1201011	4.5	2.5
Manganese	7439965	1965.85293	1201208	1300	1200612	NA	0	NA	0	8482.67809	1201208	1	0
Nickel	7440020	52.0065394	1199707	2600	1199706	NA	0	NA	0	936.4715621	1199707	1.1	3
Zinc	7440666	118.1389855	1199707	3300	1200510	NA	0	NA	0	234.3609083	1199707	2.1	13
Mercury @	7439976	0.77	1199707	0.0018	1199707	NA	0	0.0013	1199707	2.8	1199707	1	**
Fluoride	16984488	2252.009539	2201302	NLS	0	NA	0	NA	0	16491.13471	1201302	1	0
#N/A	1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

= Carcinogen

** = Background exceeds standards.

REASONABLE POTENTIAL: CHEMICAL SPECIFIC (p. 2 of 2)

*concentration values in ug/L except as noted: loads in lb/d

Facility:	DECO Monroe	Disch. Rate:	3061.92 cfs	95% Ex. Flow:	122476.8 cfs	Conc.	Load (lbs/day)
Outfall:	001			H. Mean Flow:	122476.8 cfs	<i>Hg Loading Calculated based on LCA (ng/L) of:</i>	6 0.09897912
Date:	3/10/2015			90Q10 Flow:	122476.8 cfs	<i>TP Loading based on concentration (mg/L) of:</i>	0

Parameter	Monthly Average PEL						Daily Max PEL		PEO		DECISION			
	FCV	load	HNV	load	HCV	load	WV	load	conc	load	Avg	Max	Avg	Max
Barium	4815.670965	79441.81	20900	344777.3	#VALUE!	#VALUE!	#VALUE!	#VALUE!	2498.224	41212	260.4	260.4	no recs	
Boron	79200	1306524	44000	725846.9	#VALUE!	#VALUE!	#VALUE!	#VALUE!	69000	1138260	310	310	no recs	
Copper	107.7698965	1777.828	5130	84627.15	#VALUE!	#VALUE!	#VALUE!	#VALUE!	40.31734	665.0958	36.3	36.3	quarterly monitoring	
Lead	1005.465696	16586.68	129	2128.051	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1796.181	29630.74	8.06	8.06	no recs	
Manganese	21624.38223	356727.1	14300	235900.2	#VALUE!	#VALUE!	#VALUE!	#VALUE!	8482.678	139934.7	186	186	no recs	
Nickel	599.2791267	9886.02	28570	471305.6	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1030.119	16993.37	34.1	34.1	no recs	
Zinc	2599.010564	42874.63	36170	596679.1	#VALUE!	#VALUE!	#VALUE!	#VALUE!	492.1579	8118.893	74.4	74.4	no recs	
Mercury @	0.77	12.70232	0.0018	0.029694	NA	#VALUE!	0.0013	0.02144548	2.8	46.19026			LCA 5 ng/L	
Fluoride	24772.10493	408653.5	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	16491.13	272046.3	0.005271	0.008607	no recs	
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	14880	14880		
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0		
											0	0		

* SILVER - Appropriate Dissolved Metal Translator must be entered in PEL 1

PEQ -- Effluent Data Summary
 (all values in ug/L)

DATA ENTRY

Parameter:	Barium	Source	Boron	Source	Copper	Source	Lead	Source	Manganese	Source	Nickel	Source	Zinc	Source	Mercury @	Source
No. Nondetect	0		0		0		0		0		0		0		0	
Data	42	11/4/2013	50	11/4/2013	9.4 12.1 9	11/4/2013 1/6/2010 2/4/2010	1.3	11/4/2013	30	11/4/2013	5.5	11/4/2013	12	11/4/2013	0.00392 0.00299 0.00371 0.00253 0.00984 0.00134 0.00124 0.00496 0.00475 0.0035 0.0017 0.00315 0.0046 0.00225 0.0034 0.0051 0.0053 0.0014 0.0076 0.0064 0.0061 0.0039 0.0021 0.0038 0.00269 0.0022 0.00541 0.00466 0.00471 0.00438 0.0126 0.00433 0.00277 0.00245 0.0017 0.00179 0.00421 0.00277 0.00167 0.00249 0.00339 0.0039 0.00405 0.00372 0.0021	1/5/2010 2/4/2010 2/16/2010 3/4/2010 3/15/2010 4/6/2010 4/20/2010 5/3/2010 5/24/2010 6/4/2010 7/1/2010 8/4/2010 9/8/2010 10/11/2010 11/3/2010 12/1/2010 1/5/2011 2/9/2011 3/7/2011 4/7/2011 5/4/2011 6/6/2011 7/11/2011 8/1/2011 9/12/2011 10/10/2011 11/7/2011 12/12/2011 1/9/2012 2/6/2012 3/5/2012 4/2/2012 5/14/2012 6/4/2012 7/2/2012 8/6/2012 9/10/2012 10/1/2012 11/5/2012 12/3/2012 1/7/2013 2/4/2013 3/4/2013 4/8/2013 5/6/2013

PEQ -- Effluent Data Summary
(all values in ug/L)

Parameter:	Fluoride	Source	#N/A	Source	#N/A	Source
No. Nondetect	0		0		0	
Data	2400	11/4/2013				

PROJECTED EFFLUENT QUALITY ANALYSIS (<10 Detectable):

* all values in ug/l

	Barium	Boron	Copper	Lead	Manganese	Nickel	Zinc	Mercury @	Fluoride	#N/A	#N/A
Sample Max.	42	50	12.1	1.3	30	5.5	12	0.0126	2400	0	0
Total Samples	1	1	3	1	1	1	1	52	1	0	0
Multiplier	6.2	6.2	3	6.2	6.2	6.2	6.2	1	6.2	0	0
PEQ:	260.4	310	36.3	8.06	186	34.1	74.4	0.0126	14880	0	0

PROJECTED EFFLUENT QUALITY ANALYSIS (>=10 Detectable):

PARAMETER:	Barium	Boron	Copper	Lead	Manganese	Nickel	Zinc
TOTAL NO. VALUES:	1	1	3	1	1	1	1
DETECTED:	1	1	3	1	1	1	1
NON-DETECTED:	0	0	0	0	0	0	0
d (% data<detect)	0	0	0	0	0	0	0
m (mean of data >detect)	42	50	10.16667	1.3	30	5.5	12
std dev	#DIV/0!	#DIV/0!	1.686219	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
n	1	30	1	30	1	30	1
d^n	0	0	0	0	0	0	0
p	0.95	0.95	0.95	0.95	0.95	0.95	0.95
std normal dist fn (Z) Z_p	2.447747 1.645211	2.447747 1.645211	2.447747 1.645211	2.447747 1.645211	2.447747 1.645211	2.4477468 1.6452114	2.4477468 1.6452114
1+(s/m)^2	#DIV/0!	#DIV/0!	#DIV/0!	1.027509	1.027509	#DIV/0!	#DIV/0!
(sigma_d)^2	#DIV/0!	#DIV/0!	#DIV/0!	0.027137	0.027137	#DIV/0!	#DIV/0!
mu_d	#DIV/0!	#DIV/0!	#DIV/0!	2.305546	2.305546	#DIV/0!	#DIV/0!
(sigma_dn)^2	#DIV/0!	#DIV/0!	#DIV/0!	0.027137	0.000917	#DIV/0!	#DIV/0!
mu_dn	#DIV/0!	#DIV/0!	#DIV/0!	2.305546	2.318656	#DIV/0!	#DIV/0!
P_95 exponent	#DIV/0!	#DIV/0!	#DIV/0!	2.576567	2.368464	#DIV/0!	#DIV/0!
P_95 (PEQ)	#DIV/0! Max	#DIV/0! Average	#DIV/0! Max	#DIV/0! Average	13.15192 Max	10.68097 Average	#DIV/0! Max
					#DIV/0! Max	#DIV/0! Average	#DIV/0! Max
						#DIV/0! Average	#DIV/0! Max

NOTES: For purposes of this summary, ^ represents an exponent or superscript while _ represents a subscript.

Variables are defined in Part 12, Rule 1225 (3) (a).

	Mercury @		Fluoride		#N/A		#N/A	
	65		1		0		0	
	65		1		0		0	
	0		0		0		0	
	0		0		#DIV/0!		#DIV/0!	
	0.0040326		2400		#DIV/0!		#DIV/0!	
	0.0024175		#DIV/0!		#DIV/0!		#DIV/0!	
30	1	12	1	30	1	30	1	30
0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0.95 2.4477468 1.6452114	0.95 2.4477468 1.6452114	0.95 2.44774683 1.64521144	0.95 2.44774683 1.64521144	0.95 2.44774683 1.64521144	#DIV/0! #DIV/0! #DIV/0!	#DIV/0! #DIV/0! #DIV/0!	#DIV/0! #DIV/0! #DIV/0!	#DIV/0! #DIV/0! #DIV/0!
#DIV/0!	1.3593783	1.3593783	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0!	0.3070274	0.3070274	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0!	-5.666846	-5.666846	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0!	0.3070274	0.0295085	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0!	-5.666846	-5.528087	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0!	-4.755234	-5.245472	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0! Average	0.0086065 Max	0.0052713 Average	#DIV/0! Max	#DIV/0! Average	#DIV/0! Max	#DIV/0! Average	#DIV/0! Max	#DIV/0! Average